

# California Energy Commission



## *Challenges and Opportunities for Biomass-to-Ethanol Development in California*

Bioenergy Development and Expansion

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# California Energy Commission



## Executive Order D-5-99 (Item 11)

- *Evaluate the potential for development of a California waste-based or other biomass ethanol industry in California*
- *Evaluate what steps, if any, would be appropriate to foster waste-based or other biomass ethanol development in California should ethanol be found to be an acceptable substitute for MTBE*



## *Opportunities*

- California forestlands have substantial biomass resources (21.5 million bdt)
- Increased controlled burning on public lands and damage from wildfires has generated a need to reduce forest slash and thinnings
- Biomass is a renewable energy source if managed properly
- Biomass can be used to improve energy self-sufficiency in rural and more remote areas



# Opportunities

- Biomass may offer fewer negative environmental impacts than non-renewable energy resources
- Reduce wildfire costs and losses by using forest wastes as a feedstock, decreasing the volumes of wildfire fuels
- Improve air quality (from reduced burning)
- Reduce ethanol imports into the state if ethanol is found to an acceptable alternative to MTBE



# Opportunities

- Create jobs, new tax base and economic development
- Create new biomass power revenues for electricity and steam by collocating ethanol plants with existing biomass power plants
- Potential for improvement in forest health
- Potential for reductions of greenhouse gas emissions



# Challenges

- Difficulty of the biomass industry to compete with low-cost natural gas in a deregulated market
- Lack of commercial scale experience with biomass-to-ethanol process technologies
- Relatively high production costs and capital requirements
- Ability to obtain consistent, low cost feedstock



# Challenges

- Without an ethanol market, it is difficult and may be impossible to finance new biomass-to-ethanol projects (uncertainty with pending regulations)
- Uncertainty with local permitting and siting requirements
- Infrastructure, distribution and storage requirements



# Challenges

- Ethanol is currently dependent on government support such as federal tax incentives. How much additional (state and Federal) government support is appropriate and for how long?





## For More Information...

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